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A. Grigyalis

The species Potamothrix hammoniensis Mich. (Oligochaeta) is present in abundance in the small lakes of Denmark, Poland, Lithuania, Latvia, Estonia, Finland and Sweden. It has also been detected in fairly large numbers in the water reservoirs of the Volga steppe zone, the Dnieper-Bug estuary, the lakes of Jugoslavia and some of the English lakes.

In lakes of average thermic depth, such as Dusia and Galstas (Lithuanian SSR), P. hammoniensis oligochaetes comprise up to 80-90% of the entire population of the zoobenthos, 15-50% in the thermically shallow Lake Obyalia, 54-63% in the thermically shallow Lake Syankutis and 0.1-24.8% in the thermically deep Lake Shlavantas. According to the data of Klimkaite and Martinkenene (1970), the smallest amount of oxygen (2.17 mg/l, saturation 17.0%) in the benthic layer of water was in Lake Shlavantas.

In some instances, P. hammoniensis oligochaetes are a monocrop, as for example, in the deep part of Lake Vershyukas (Lithuanian SSR) in dark mud at a depth of 24 m, where the oxygen in late July 1977 was 1.9 mg/l, and the CO_2 - 1.44 mg. Their population there amounted to 1840 specimens/m^2 with a biomass of 6.04 g and, strange as it may seem, a large number of (pea-sized) colonies of the protozoans Ophrydium versatile.

Further to the west, in the strongly eutrophised Lake Tynwald (Poland), the maximum depth of which is 3.3 m, P. hammoniensis was among the five dominant lake-dwellers. The production of oligochaetes there was as high as 39 g/m^2 (Zytkowicz, 1976). In Lake Taltowisko (Poland) P. hammoniensis dominated in the zoobenthos at all depths (Kajak, 1975).

In the small lakes to the west of the Baltic Sea, for example in the eutrophic Lake Esrom (Denmark), under oxygen-deficient conditions at a depth of 20 m (anaerobic conditions exist for two to three months - Jonasson and Thorhauge, 1972) the species P. hammoniensis forms a monocrop 41
with a density in various years of between 2,550 and 44,100 specimens/m^2 (Jonasson and Thorhauge, 1976). In the oligochaete fauna of Lake Hjälmaren (Sweden), P. hammoniensis amounted to 60-75%, with the exception of the western basins, in which Limnodrilus hoffmeisteri was more abundant (Milbrink, 1973).

Range of Potamothrix hammoniensis (Mich.): x - localities in which it is dominant; o - habitats.

To the east of the Baltic Sea, in the Estonian lakes, P. hammoniensis was dominant, amounting to 12.2–42.0% of the population and to up to 10% of the biomass of the zoobenthos (Timm, 1962, 1963). In the zoobenthos of Lake Võrtsjärv, oligochaetes occupy second place and among them the species P. hammoniensis amounts to up to 50% (Timm, 1975).

In the Finnish lakes Limnodrilus hoffmeisteri and P. hammoniensis were dominant (Brinkhurst, 1964).

In the zoobenthos of the Karelian lakes, P. hammoniensis comprises 42
5–27% with respect to population, and 3–21% with respect to biomass (Popchenko, 1969).

In the littoral zone of Lake Onega, during the period 1967–1970 P. hammoniensis was found in 17 of 240 samples, its maximum concentration being as high as 600 specimens/m^2. In the fauna of Lake Vozhe the species occurs only rarely (Slepukhina, 1975a).

The northern limit of the range of P. hammoniensis in Europe reaches the White Sea, i.e. the Arctic Circle (Popchenko, 1969).

In the central part of the Ob'-Irtysh Basin Zaloznyi (1973) found this species to be present in large numbers in backwaters. In the rivers it is relatively scarce. Zaloznyi (1976) considers it a fairly widely dispersed species in river waters where there are silty and sandy soils, and also in backwaters, oxbow lakes and amongst vegetation in the silty soils of floodplain lakes. Its greatest abundance (860–1,240 specimens/m^2) was observed in the ponds of the River Tom'.

The eastern limit of the range is the basin of the Yenisei River. According to a personal communication by A.I. Morev (Magadan), P. hammoniensis is not found eastwards of the Yenisei.

The southern limit of the range in Central Asia encompasses lakes Biilikul', Imantau, Sultan-Kel'dy and Kara-Kol', and the Alma-Ata and Zerenda pond farms in Central and Southern Kazakhstan (Akhmetova, 1975).

In the small lakes of Transcaucasia and the ponds of the Krasnodar Krai P. hammoniensis occurs only rarely (Kasymov, 1959; Slepukhina, 1975).

The numbers of P. hammoniensis are increasing in the reservoirs of the steppe zone and Middle Volga. In the Tsimlyansk reservoir the species is abundant, the frequency of its occurrence in some reaches being as high as 54.5-93.3%, 32.8-77.7% and 37.5-60.0%. The main biomass of the zoobenthos is composed of oligochaete worms numbering from 3,000 to 13,000 specimens/m^2 (Miroshnichenko, 1958, 1974).

The dominant species in the zoobenthos of the Kuibyshev water reservoir were P. moldaviensis, L. hoffmeisteri and P. hammoniensis. On the index of dominance, in 1958 P. hammoniensis occupied third place (i.d. 1223), in 1959 - fourth place (i.d. 1870) and in 1967 - second place (i.d. 24173) (Lyubin, 1974). In the Kutuluk reservoir located on the river of that name which is a tributary of the Volga and is a flattened steppe river, fed chiefly by spring waters, four species of Tubificidae, including P. hammoniensis, predominated among the Oligochaeta (Borodich, Lyubin and Lyakhov, 1974). In the Rybinsk reservoir, P. hammoniensis was the least numerous of three widely occurring species of the Tubificidae (Poddubnaya, 1959).

In southern Europe, one of the basins in which P. hammoniensis occupies a dominant position with respect to extensiveness of distribution, numbers and biomass is the Dnieper-Bug estuary. There, in the muds of the central reach P. hammoniensis is developing in large numbers. In 1970-1971 the 43
median population of it amounted to 3,000-4,000 specimens/m^2, and the biomass - 1.8 g/m^2. The highest values were observed in brown mud: 104,400 specimens/m^2 and 48.4 g/m^2 (Moroz, 1977). By means of observations under natural conditions and also by conducting an experiment it was found that a salinity of 0.3-1.6‰ is favourable to the development of P. hammoniensis (Moroz, 1974).

P. hammoniensis was noted as the dominant species at the mouth of the Ingil' River together with Limnodrilus hoffmeisteri and P. moldaviensis, as well as in lakes Okhrid, Doiran, Prespa and Skadar on the Balkan Peninsula, where the maximum biomass in 1967 reached 5,956 g/m^2 (Sapkarev, 1959).

In the Italian, French and Spanish waters, although P. hammoniensis does occur, it is not a prolific species (Nocentini, 1963; Giani, 1976, Gross, 1976).

In British lakes, P. hammoniensis is a common species. But there are lakes, such as Grasmere, Esthwaite Water and the shallow Lake Alderfen Broad, where it is dominant. In the latter, for example, it numbers as many as 22,500 specimens/m^2 at pH indices of 7.8-8.4 in water and 6.9-7.3 in sediments. There are also lakes such as Bala, in which P. hammoniensis is a rare species, and Lake Windemere, where it does not occur at all (Mason, 1977).

Outside the range of the species, as an exception, Brinkhurst (1964) has reported several specimens of P. hammoniensis at the port of Toronto on Lake Ontario (Canada) at a depth of 12.5 m. Although the genus Potamothrix is, in general, rare in the lakes of the American mainland, finds of P. hammoniensis can still be expected.

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ECOLOGY AND DISTRIBUTION OF THE OLIGOCHAETE *POTAMOTHRIX HAMMONIENSIS* (MICH.)

A. GRIGELIS

Summary

A short survey is given of literature data together with the results of the author's researches on Lithuanian lakes. The discussed species inhabits mostly lakes, especially their profundal zone, often as one of the dominant animals. It is also abundant in some rivers, reservoirs and estuaries with a low salinity. Its distribution range (Fig.) embraces most of Europe, together with western Siberia and Kazakhstan. There have been some single finds in North America, as well.